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Key findings of IPCC on regional climate-change impacts overall considered well founded

PBL Netherlands Environmental Assessment Agency found no errors that would undermine the main conclusions in the 2007 report of the Intergovernmental Panel on Climate Change (IPCC) on possible future regional impacts of climate change. The IPCC report conclusively shows that these effects already are visible in many places around the world, and that these will become more serious under further temperature increases. However, the foundation for some of these conclusions could have been made more transparent.

Furthermore, the PBL found that, in the IPCC's summary conclusions, the emphasis had been put on the main negative impacts of climate change. It is the PBL's advice, for future IPCC reports, to supplement this 'risk approach' with 1) a summary of the full spectrum of the effects of climate change, and 2) with an analysis of worst-case scenarios.

Additional investments in quality control also are deemed necessary in order to avoid mistakes and shortcomings, to the extent possible.

These are the main conclusions and recommendations in the report 'Assessing an IPCC assessment: an analysis of statements on projected regional impacts in the 2007 report', published today by PBL Netherlands Environmental Assessment Agency. The PBL has conducted this investigation into the reliability of information in the regional chapters of the IPCC Working Group II Report, at the request of the Dutch Minister for the Environment. To ensure the quality of this investigation, it was carried out under the supervision of the Royal Netherlands Academy of Arts and Sciences (KNAW).

Reasons and approach

Reasons for the investigation were errors found in the IPCC Working Group II Report about the regional impacts of climate change. The errors concerned incorrect information on the melting of Himalayan glaciers, and the stated percentage of Dutch land area that lies below sea level. This raised concerns within the Dutch parliament over the reliability of scientific information on which government climate policy had been based. The Minister for the Environment subsequently requested the PBL to investigate other possible inaccuracies in the report, and to assess if and how any errors would affect the IPCC's main conclusions on the regional consequences of climate change.

Following this request by the minister, the PBL analysis mainly focused on the assessment of the foundations for the main conclusions in the IPCC report. PBL researchers made a distinction between factual errors on the one hand, and comments on the quality of the foundations for the main conclusions on the other hand.

Comments do not affect main conclusions, nevertheless: more transparency needed

Among the 32 main conclusions of the IPCC on the regional consequences of climate change, the PBL discovered one minor error, which did not undermine the conclusions drawn. This minor error concerns an inaccuracy in one conclusion: the estimated number of people in Africa who are at risk of experiencing water stress due to climate change by the year 2020, was stated as being between 75 and 250 million people, but should have read between 90 and 220 million people. However, even with this emendation, the range still fits within the uncertainty margins.

For 7 of the 32 main summary conclusions, the PBL had one or more comments to make about their foundations; the most common comments applied to 6 of them, and pertained to insufficient explanation of how experts had arrived at their particular judgments. Therefore, the PBL argues for more transparency and clarity in argumentations that lead to certain conclusions.

Emphasis on serious, negative impacts

PBL Netherlands Environmental Assessment Agency concluded that the summaries in the IPCC Working Group II Report put an emphasis on projections of the more serious, negative impacts of climate change. This selection was an obvious choice, and also had been approved by the governments that constitute the IPCC. However, this meant that the less severe impacts and any positive effects did not make it into the summaries for

policymakers, which made the overall tenor of the summaries more negative than that of the underlying chapters. For example, the possibly positive consequences for forestry in North Asia are named in one of the chapters, but they are not named in the summaries. In addition, the investigated 32 summary conclusions on regional impacts do not mention other factors that play an important role, such as the influence of population growth on water shortages. The PBL recommends to present a broader representation of projected developments in the summaries for policy makers in the Fifth Assessment Reports in 2013 and 2014.

In recent years, more climate change literature has emerged on possible developments with small chances but with potentially large consequences. Therefore, the PBL recommends to pay attention to 'worst-case scenarios'.

Improvements in quality control recommended

The IPCC is an international network in which scientists from all over the world participate, the purpose of which is to come to an assessment of the state of the art in scientific knowledge, so that well-balanced political decisions can be reached. The PBL has indicated that, in a document that is thousands of pages long, representing the state of the art in science, errors seem in actual practice unavoidable.

To prevent these errors from occurring, as much as possible, the PBL advises the UN countries that together constitute the IPCC, to increase their investment in the quality control of IPCC reports. As impacts of climate change are becoming more noticeable, society is demanding higher quality standards regarding scientific information. In the meanwhile, the amount of scientific literature is increasing, dramatically. The PBL recommends that Coordinating Lead Authors of IPCC, therefore, receive help from hired assistants.

The IPCC could further diminish the chances of errors being made by involving more people in the realisation of their reports. Interested parties could be given the opportunity, both before and after publication of IPCC reports, to report on possible errors. Such a level of openness could further restore credibility of the IPCC.

The PBL also makes a case for addition research into the impacts of climate change on developing countries. There is much more information available on the consequences for Europe and the United States than there is for developing countries, although it is these developing countries that are most vulnerable.

Himalayan glaciers and percentage of the Netherlands below sea level

Following the discussion in the Dutch parliament, the PBL report briefly examines the error regarding the Himalayan glaciers, and the one about the percentage of Dutch land area that lies below sea level. For these two errors, which started the discussion about the quality of IPCC reports, as for others, also holds that they do not affect the main conclusions of the IPCC report.

The glaciers in the Himalayas will most definitely not have disappeared by 2035, as was stated in the IPCC report. Had this been correct, then the glaciers would have to melt 25 times faster than they have in the recent past. The error related to sea level rise stems from a text supplied by the PBL. In the IPCC report is stated that 55% of the Netherlands is situated below sea level. This should have read that 55% of the Netherlands is prone to flooding: 26% of the country is at risk because it lies below sea level, and another 29% is susceptible to river flooding.

The current policy concerning safety against flooding in the Netherlands, as formulated in the National Water Policy Plan and in the Delta Programme, is based on the available knowledge on climate change, sea level rise, river discharges and uncertainties. The discussions on the IPCC have no effect on the assumptions under the National Water Policy Plan.

Registration website

In early March 2010, the PBL launched a Dutch website to give scientists, experts and other interested parties the opportunity, until early in April, to submit possible errors in the regional chapters of the IPCC Working Group II Report. This website yielded some forty responses. Most (35) were related to other subjects than regional consequences of climate change. Those that did pertain to climate-change impacts were examined in the investigation. All website reportings and PBL responses have been published on [the PBL website](#). This is in Dutch only.

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IPCC

On average, the IPCC evaluates the state of the art in climate science, every six years. In 2007, it published its fourth evaluation report, which consisted of four volumes on climate change. The Working Group I Report is about the physical science basis of climate

change; is the earth warming, what are the causes and what is the human influence related to this issue? The Working Group II Report deals with climate-change impacts, adaptation to climate change, and vulnerability of people and nature to climate change. The Working Group III Report charts the options for mitigation of climate change; by how much could greenhouse gas emissions be reduced, and at what cost? The conclusions from the three working groups were summarised in a fourth report, the Synthesis Report. The PBL used this last report as a starting point, as it has been the most visible to policymakers. The investigators examined whether the 32 main conclusions in this report on the consequences of climate change to various world regions were sufficiently well-founded in the Working Group II Report.

This year, the IPCC will start the fifth evaluation of climate science, which will lead to a new series of reports in 2013 and 2014. The PBL recommendations are directed to an improvement of this fifth evaluation.

The Netherlands Environmental Assessment Agency (PBL) is the national institute for strategic policy analysis in the field of environment, nature and spatial planning. The PBL contributes to improving the quality of political and administrative decision-making by conducting outlook studies, analyses and evaluations in which an integrated approach is considered paramount. Policy relevance is the prime concern in all their studies. The PBL conducts solicited and unsolicited research that is both independent and always scientifically sound.

This report does not necessarily represent the views of the Dutch Government.

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